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BIG SKY
Clearwater

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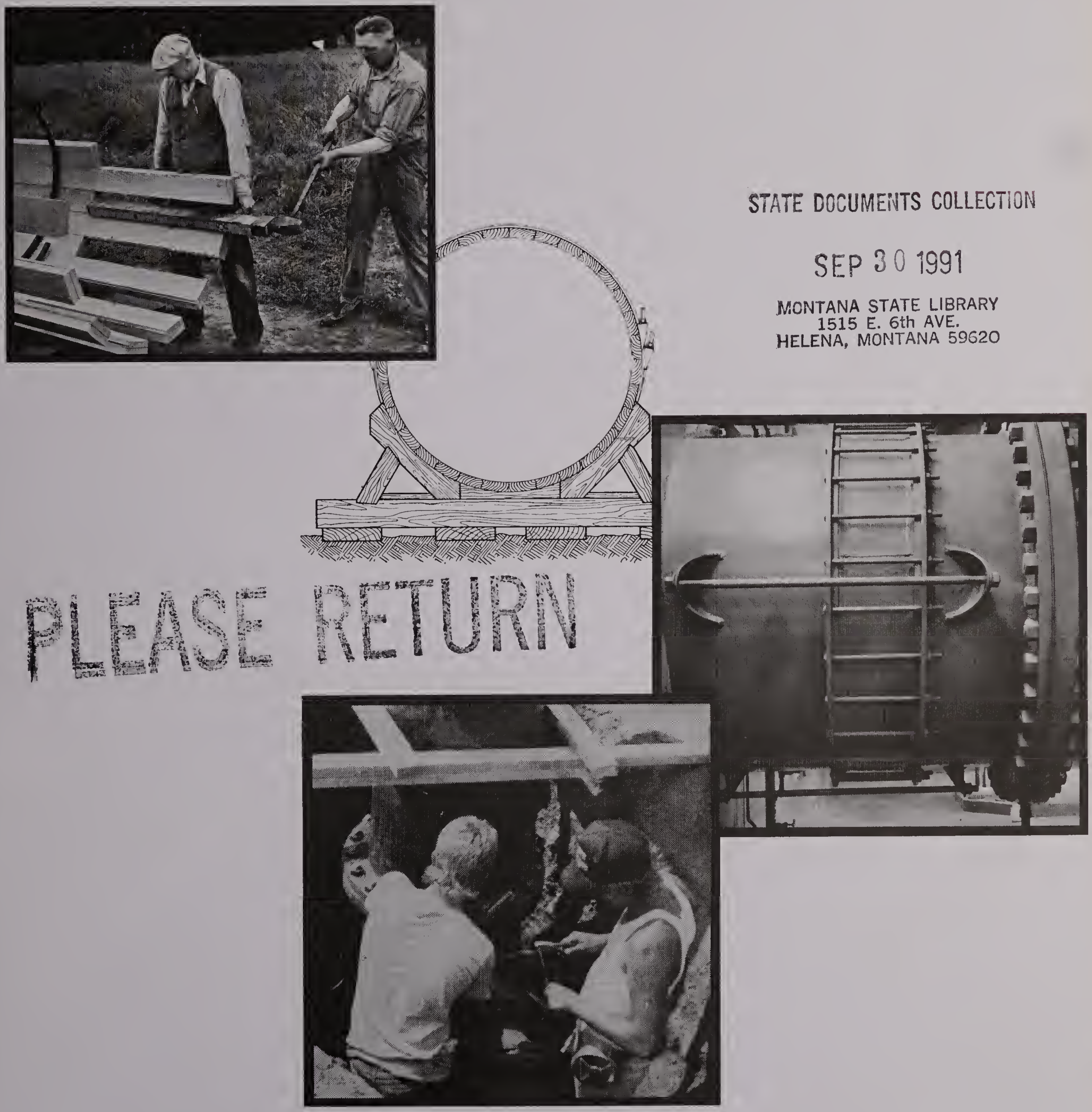

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If you have any ideas or information that you would like to pass along to other people involved in the water and wastewater field, please don't hesitate to contact the office of the Water Quality Bureau. This publication welcomes articles of interest and random pieces of information regarding anything to do with water.

An article may consist of your own thoughts and ideas about something you may have experienced. Perhaps such information could help someone else in their day-to-day work. It could also be a technical article that is developed from research information and library resource material. If it has to do with water and you think it may be of interest, give us a call at the WQB: 444-2406.

If you do not wish to continue receiving this publication please send us your name and address so that we can remove your name from our mailing list.

Water Quality Bureau
Department of Health & Environmental Sciences
Cogswell Building
Helena, MT 59620

Cover: Artwork donated by Robert Peccia & Associates, Helena, Montana.

Photos: Continuous Wood Stave Pipe, Restrained Coupling on Large Diameter Steel Pipe, Inlet Piping to New Storage Tank.

The Big Sky Clearwater is for water and wastewater operators across Montana. It is published two times a year by the Water Quality Bureau of the State Department of Health and Environmental Sciences in cooperation with the Montana Section of the American Water Works Association and the Montana Water Pollution Control Association.

Publication dates: February 1 and August 1. Last date to receive contributions is 30 days before publication.

DON'T EVER CHANGE!!

That old cliché, "Don't ever change," used to be something I'd like to hear. Hearing it would lend a certain sense of self-satisfaction that someone approved of me the way I am.

Now, however, I think I'd have a different reaction. The reason is that as fast as things are changing, I know I need to adapt and change along with them or risk being left behind.

Frankly, most people are constantly faced with change and find it to be frustrating. The reason change is frustrating is because it keeps you from getting too comfortable with the way things are. Just about the time you feel like something is under control, the scenario changes and you need to react differently. It is sometimes difficult to balance needed changes with consistency and a cool head.

Change is an undeniable part of our industry. Change in the environmental field is occurring faster than it has for years, and possibly faster than it ever has. Despite this pattern, too often we find ourselves saying, "We never used to do that," or, "We used to just do this." If you think about it, those may not be appropriate responses. It is difficult to justify our reliance on yesterday's responses without reevaluating its applicability to today's needs.

Our regulations and responsibilities are changing in response to an existing event or need. They have changed to help people protect themselves or the environment from problems whose importance has changed. Health threats and environmental hazards are being addressed because of changes in analytical and treatment technologies, or in appreciation of the effect the pollutants have on us.

Fortunately, most of the time, adapting to change boils down to the need for just a change in attitude -- not a complete personal overhaul. Consider the cover of this issue of the *Big Sky Clearwater*. Not so long ago, wood-stave pipe was the best available. Yet we know subsequent improvements and innovations have made them obsolete. The idea of a pipe isn't obsolete, just how it is made.

To me, wood-stave pipe is a reminder to strive for innovation and improvement so I too won't become obsolete -- How about *you*?

- Editor

SIXTEEN YEARS AGO

by Ken Johnston

From Big Sky Clearwater, June 1976

(Editor's Note: This article was written in 1976, about the year 1960. Significant environmental changes had occurred in that 16 year period. As we look back to 1976-recall at that time there wasn't yet a federal Safe Drinking Water Act in effect! What will the future hold...?)

While cleaning out old papers and junk, I came across an article in a national women's magazine dated 1960 that caused me to stop and reflect upon the progress that has been made in water resource protection since the article was written in 1960.

The author pointed out the dangers of rapidly increasing pollution of the nation's waters in a very graphic manner. "We think that the water we draw from our tap is pure," he says, "but don't take it for granted!"

The city of Rensselaer, New York, was telling customers that "... city water in Rensselaer is so polluted that it is dangerous for human consumption." The bacterial count in their water had soared. In Salt Lake City, cases of hepatitis had increased to three times the previous year's level and water supplies were suspect. A Denver suburb was complaining that their water was milky and smelled like a swamp because six other communities were dumping raw sewage into the creek that supplied them. In Colorado and New Mexico, radioactivity of water supplies ranged from 40% to 160% above maximum permissible levels from uranium milling wastes discharged into the Animas River.

In case after case, the results of increasing population and industrial activity were shown to be causing water supply pollution problems. A spectacular sudsy water in Chanute, Kansas was due to the buildup of "hard" detergents, and a glass of Chanute water had a head on it like a mug of Budweiser! Detergent problems were widespread across the nation.

Sixteen years ago, people were worried about the effect of pesticides. DDT, DLD, chlordane, aldane and other powerful pesticides were uncontrolled and the usage had quadrupled in only four years. "What is the cumulative impact of these chemicals, singly or in combination, on the human beings that drink them?" was being asked by the Public Health Service.

Many communities were still dumping enormous tonnages of disease-carrying sewage, raw and untreated, into the water sources of their downstream neighbors. As I recall, 16 years ago Great Falls was just completing their primary plant to take their raw sewage out of the Missouri. Kansas City was dumping raw sewage into the Missouri which was a major concern to officials in St. Louis, but St. Louis was dumping raw sewage and ground garbage into the Mississippi causing problems to cities below them.

Packing plants at Sioux City were dumping wastes into the Missouri River which caused gassing sludge banks, and offensive odors drifted from the river.

Packing plants at Sioux City were dumping wastes into the Missouri River which caused gassing sludge banks, and offensive odors drifted from the river.

Sounds horrible? It sure does, and it makes one think about what would have happened if the great clean-up effort, of which we are all a part, had not taken place. What would the waters of this nation look and smell like if the massive pollution control programs, such as the National Pollutant Discharge Elimination System, had not been put into operation?

Sometimes we cuss the system, sometimes it may seem like "Big Brother" is looking over our shoulder and dictating to us, but when one reflects back into the conditions that were developing a few years ago, the cure doesn't seem all that bad. Water quality is improving. Industrial wastes are nearly under control, sewage has been primary treated for some time now, and secondary treatment for all domestic waste is nearing that goal.

Sixteen years ago, under Public Law 660, a city could get federal assistance to construct sewage facilities up to 30 percent, or a maximum of $250,000.

As the women's cigarette advertisement says, "You've come a long way, baby!"

And that's the way it was, sixteen years ago.

Montana Water Operator Dies in Confined Space

In May of this year, Randy Lowman, a water operator, was found unconscious in a confined space. He did not survive the incident. His obituary and the newspaper account of the accident are provided here as a reminder to you that you work in a potentially dangerous industry.

Please be careful out there! Treat every confined space as a dangerous environment. The confined space that claimed Randy's life was entered previously without consequence.

CONDITIONS CHANGE AND CAN BE LETHAL.

Take the necessary precautions, learn about safety, and above all else--
don't take chances!

Randy G. Lowman

Randy Grant Lowman, age 35, of 3661 Rosebud Drive, died in an accident, Thursday afternoon, [May 23, 1991] at the Billings Water Plant.

Randy was born in Billings, May 24, 1955, the son of Larry and Dorothy Lowman. He graduated from West High in 1973 and attended Eastern Montana College for a year.

Randy was married to Nancy Jo Wyman in Billings on May 5, 1979. Life and love meant one thing to Randy: his family -- his wife, Nancy and their children, Craig and Cindy.

Randy enjoyed the outdoors. Hunting gave him the opportunity to share this love with both his son and dad. Fishing was a favorite pastime, not because of the fish he caught but because of the excitement he saw in his wife when she did.

Sports were a major part of his life: soccer, baseball and basketball; all of which he coached so he could be close to his son, Craig.

His daughter, Cindy, was his "little princess." Since the day she was born, she brought only tears of happiness to his life. Cindy also participated in sports with her dad including swimming, which Randy was taught at the YMCA.

His wife, Nancy, whom he fondly referred to as "his sunshine," learned to enjoy these things with him after their marriage.

He will be remembered as a loving husband, father and son. "Dad and dear husband, we will all miss you and hold you close to our hearts."

Besides his wife, Nancy, son, Craig, and daughter, Cindy, Randy is survived by his parents, Mr. and Mrs. Larry Lowman of Billings, a sister, Mrs. Robert (Linda) Hangartner of Millville, Utah; maternal grandmother, Esther Matthaes of Laurel; and paternal grandmother, Myrtle Lowman of Fontana, Calif.

Funeral services will be held at the Dahl Funeral Chapel on Wednesday, May 29, at 10 a.m. Interment will be in Sunset Memorial Gardens.

Billings Gazette - Sunday, May 26, 1991

Worker's death called suffocation

By Nick Ehli of the Gazette Staff

The city worker who died in a manhole Thursday afternoon, probably suffocated when an unknown chemical reaction drained the hole of oxygen, authorities said Friday.

Investigators, however, aren't yet certain how the chemical leaked into the hole, causing the asphyxiation of 35-year-old Randy Grant Lowman, said Billings Police Captain, George Bell.

Lowman was found unconscious Thursday, at about 3:30 p.m., by co-workers at the city's water plant at 2251 Belknap Avenue. Emergency workers tried to save Lowman, of 3661 Rosebud Drive, but he was pronounced dead upon arrival a short time later at Deaconess Medical Center, officials said.

"We're looking at this as an accidental death," Bell said. "We believe he was overcome by a lack of oxygen."

The Billings Fire Department was analyzing the seven-foot-deep hole Friday, but by late afternoon had not found a chemical that would take the oxygen from the air, Bell said.

"All we can say for certain at this point, is that there is a very small amount of oxygen in that hole," Bell said.

He said Detective Ron Cummings went into the manhole to search for clues Thursday night and also suffered a shortness of breath within a short time.

Lowman fell and hit his head during the accident, but Yellowstone County Coroner, Bill Jones, said Friday, that the wound wasn't enough to cause the death.

Bell said that investigators have no way of knowing if Lowman hit his head before or after blacking out from the lack of oxygen. "It could have happened either way," Bell said. "It's kind of a freak thing."

Although the cause of the lack of oxygen in the hole is unknown, investigators have speculated that the high waters of the Yellowstone River may have played a part.

Lowman had gone into the manhole at the city plant, which is near the river, to turn on a water valve to irrigate a nearby park, Bell said. He was gone for about an hour before other workers noticed that he was missing.

An autopsy was performed Friday morning, but authorities may have to wait weeks before the state lab in Missoula learns what chemicals were in the victim's body at the time of his death.

In the meantime, the Billings fire and police departments will continue the investigation.

Billings Gazette, May 25, 1991

BACTERIOLOGICAL SAMPLING IDEAS

by Roy A. Wells, WQB

As members of the Water Quality Bureau travel around the state performing water system inspections we often encounter novel ideas and methods. These items often deserve to be shared. The following are a few ideas dealing with bacteriological sampling that we feel have merit.

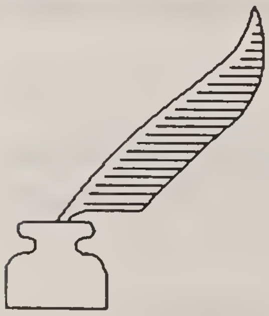
FROST PROOF HYDRANT SAMPLING

Generally speaking we discourage bacteriological sampling from frost proof yard hydrants. In some instances, such as systems that serve rural areas with cisterns, it is unavoidable. Robert Tomsheck with the rural Oilmont Water District has to deal with this problem. He does so by routinely immersing the hydrant nozzle in a container of household bleach before final flushing the hydrant and taking his sample.

If he has a hydrant that he feels may be contaminated or has yielded an unsatisfactory sample, he takes an additional step. He runs water through the hydrant. He turns the hydrant off and immediately immerses the nozzle in a container of bleach. As the hydrant drains it syphons the bleach into the hydrant and riser. After waiting a few minutes he flushes the hydrant and takes his sample.

SMOOTH NOSED SAMPLING TAP

Montana design standards require smooth nosed sampling taps. The purpose of this requirement is to eliminate sample contamination caused by threaded faucets or hose bibbs. Smooth nosed sampling taps are often not readily available and may be fairly expensive.
The late Lloyd Bjerum solved these problems at the Devon water treatment plant. He used a angle stop valve (for a sink) with the discharge outlet turned downward. A short length of tubing was connected to the outlet. In so doing, he created an ideal sampling tap from readily available inexpensive components.



WANTED: AUTHOR OF NEW LAGOON STUDY MATERIALS

The Montana Environmental Training Center (METC) is issuing a request for proposals to generate new study material for operators of lagoon wastewater treatment systems. Interested? For more information and a copy of the RFP contact Jan Boyle, METC Coordinator at 761-0417.

GREAT FALLS WASTEWATER TREATMENT PLANT

The Great Falls Wastewater Treatment Plant was recently presented with two achievements awards of major significance.

The plant, operated by Envirotech Operating Services (EOS), received the Zimpro-Passavant 1990 Plant of the Year Award for "the best record of operation, performance and innovation" from among more than 2000 eligible locations.

The activated sludge facility was eligible for the award because it uses a Wet Air Oxidation system for sludge treatment that was manufactured by the Zimpro/Passavant Corporation.

A second and more recent award is a U.S. Environmental Protection Agency, Region VIII Operations and Maintenance Excellence Award for 1992. This award was presented to the plant staff for the development and implementation of an outstanding operation, maintenance and management program for the Great Falls Wastewater Treatment Plant.

The plant was selected by the EPA for the award upon review of applications submitted by six states in the category of Secondary Treatment Facilities with a design capacity of > 10 MGD. Our application is presently in Washington, D.C. being evaluated for a possible national excellence award and we are anxiously awaiting of the results.

SCENES FROM THE 1991 JOINT MSAWWA/MWPCA CONFERENCE

Gerry Lukasik and Tim Hunter man the registration desk.

Anxiously awaiting opening ceremonies.

Dr. Amirtharajah updates all at the preconference seminar.

Arvid Hiller, Mountain Water Company, gets "babied" as part of the banquet entertainment.

Donna Jensen, WQB received the George Warren Fuller Award.

The George Warren Fuller award is conferred on one member in each of the sections of AWWA every year. It is awarded for distinguished service in the water supply field and in commemoration of the sound engineering skill, the brilliant diplomatic talent and constructive leadership of men in the Association which characterized the life of George Warren Fuller.

Tim Hunter, City of Missoula was this year's recipient of the William D. Hatfield Award.

The purpose of the William D. Hatfield Award is to recognize operators of sewage and waste treatment plants who are doing an outstanding job in the performance of their duties as well as to operators demonstrating distinguished professionalism.

NEWS ••••• *ABOUT CERTIFICATION*

***By:** Rosemary Fossum, Water Quality Bureau Certification Officer*

BY THE END OF THE SECOND TRAINING BIENNIUM ON JUNE 30, 1992, ALL CLASS 1-4 OPERATORS HOLDING FULL CERTIFICATES GIVEN BEFORE OCTOBER 1, 1990, MUST HAVE COMPLETED CONTINUING EDUCATION CREDIT REQUIREMENTS APPLICABLE TO THAT CERTIFICATE. THE THIRD TRAINING BIENNIUM WILL BEGIN ON JULY 1, 1992 AND WILL END ON JUNE 30, 1994. The CEC requirements will double during the third biennium. That means Class 1 certificates in water distribution and/or water plant issued before December 1, 1992, must earn 2.0 CEC's sometime during the third biennium; Class 1 certificates in wastewater issued before December 1, 1992, must earn 2.0 CEC's sometime during the third biennium. Class 2-3-4 in water must earn 1.0 CEC's; Class 2-3-4 in wastewater must earn 1.0 CEC's. Class 5 operators must attend four contact hours of seminar training during the two year period (.4 CEC's).

Following the June 26 hearing at which three operator comments were heard, the amendments and changes in the rules governing certification were adopted on July 26. All renewal notices mailed in May contained notice of the hearing and regulation changes. One change made since June 26: Beginning June 30, 1992, Class 5 operators must attend four (not two) contact hours of seminar training per two-year training period but their credit requirements will not double in the third training biennium.

Here is a brief summary of rule changes adopted July 26:

-A rule addition provides procedures for revocation of certification to implement 37-42-321 MCA which calls for revocation in cases of operator fraud, incompetency, or lack of reasonable care and judgment in the performance of duties.

-Fee increases provide for a single application fee of $30 (not five different fees for five classifications) for either one or both water distribution or water plant certification and a single application fee of $30 for wastewater certification. Uniform application fees will now fairly reflect uniform services provided. Renewals require continuing education sponsorship and data management, and the renewal fees will "work" exactly the same way at $30 per either or both water certificates and $30 per wastewater certificate. By law, fees must be set to cover the certification program costs. The late fee will be increased from $5 to $10 to equitably cover the extra mailing and processing costs involved in suspension of license after June 30. Program costs have depleted a small reserve, and fees have not been increased for nine years. It was time to set the fees to cover the costs equitably among all operators. New fees will be applicable to applications and renewals received after September 1, 1991.

-A rule change adds a high school graduation requirement or GED certificate for new certification applicants and drops the oral examination allowed by permission in special circumstances. In today's world even small communities must invest considerable money in water or wastewater systems. To operate such systems for the protection of the public health, the environment, and large financial investments as well, operators must have basic reading comprehension, computing, and reporting skills normally gained by a high school education. The rule change includes a special exception from this requirement for those submitting a written application which demonstrates that the applicant has the basic knowledge necessary to otherwise meet the application requirements.

-A small change allows June 30 instead of March 30 to apply for an extension of time to earn required CEC's in cases of hardship or extenuating circumstances. Another small change makes December 1 instead of October 1 the marking point for applicability of CEC requirements for the newly certified. Another accurately defines temporary certificate.

TO: CERTIFICATION APPLICANTS AND OPERATORS SEEKING TRAINING

FROM: WATER/WASTEWATER OPERATOR CERTIFICATION OFFICE, 444-2691

SUBJECT: STUDY MANUALS AVAILABLE FOR OPERATORS TAKING CERTIFICATION EXAMINATIONS OR SEEKING CORRESPONDENCE COURSES APPROVED FOR CONTINUING EDUCATION CREDIT

Well water operators taking examinations for 2A3B, 3A4B, and 4AB will be furnished STUDY MATERIAL FOR WELL WATER SYSTEMS at no charge upon receipt of their applications and fees. This study material is designed for operators of well water supplies and distribution systems for well water supplies.

Lagoon operators taking examinations for 3C aerated lagoon operator or 4C facultative lagoon operator will be furnished STUDY MATERIAL FOR SEWAGE LAGOONS at no charge upon receipt of their applications and fees.

Operators of surface water treatment plants (1B or 2B) or secondary wastewater treatment plants (1C or 2C) should order the specified study manuals listed below from California State University of Sacramento. Operators of water distribution systems serving surface water plants may order either the specified California State manual on distribution or the AWWA manual stocked in the certification office. All operators of any class may order the California State manuals for CEC credit.

Specific information about ordering California State manuals follows. California State University manuals and correspondence courses were developed by Dr. Kenneth Kerri for the U.S. Environmental Protection Agency. Manuals may be ordered alone or with course enrollment at the prices listed. Use the order form provided. Include remittance and street address with order. Manuals are shipped UPS to arrive within ten days after receipt of order. For faster air parcel post shipment, add $5 per manual. A small stock of these manuals may be available from the certification office at $5 per manual over the direct order price. Please call 444-2691 to ascertain availability.

CALIFORNIA STATE UNIVERSITY OPERATOR TRAINING PROGRAMS

COURSE	Calif. Tax 6.25%*	Manual	Enrollment
Water Distribution System Operation and Maintenance (1A,2A)	$1.25	$20	$30
Water Treatment Plant Operation, Volume I (1B)	1.88	30	30
Water Treatment Plant Operation, Volume II (Optional, 1B or CEC)	1.88	30	30
Small Water System Operation and Maintenance (2B)	1.25	20	30
Operation of Wastewater Treatment Plants, Volume I (1C,2C)	1.25	20	30
Operation of Wastewater Treatment Plants, Volume II (1C,2C)	1.56	25	30
Advanced Waste Treatment (Optional for CECs)	1.25	20	30
Industrial Waste Treatment (Optional for CECs)	1.25	20	30
Treatment of Metal Wastestreams (Optional for CECs)	0.63	10	10
Pretreatment Facility Inspection (Optional for CECs)	1.88	30	30
Operation and Maintenance of Wastewater Collection Systems, Volume I (Optional for CECs)	1.25	20	30
Operation and Maintenance of Wastewater Collection Systems, Volume II (Optional for CECs)	1.25	20	30

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

*California State Tax is not applicable to manuals ordered in Montana

MAIL THIS FORM

HORNET FOUNDATION, INC.
Office of Water Programs

OPERATOR TRAINING PROGRAMS

ORDER FORM

Please complete the following order form. Add up all the costs (Californians add 6% on cost of MANUAL ONLY). If appropriate, include postage. Once an order is received, it takes three days to process the order and UPS will take from two to ten working days for delivery, depending on the state where the order will be delivered.

INCLUDE YOUR CHECK, MONEY ORDER, OR PURCHASE ORDER, payable to **HORNET FOUNDATION**, INC., in US$, with this order form.

COURSE TITLE	MANUAL Cost/Number		CAL TAX* 6%	ENROLLMENT Cost/Number		Cost
WASTEWATER						
Operation of Wastewater Treatment Plants, Volume I	$20		$1.20	$30		
Operation of Wastewater Treatment Plants, Volume II	$25		$1.50	$30		
Advanced Waste Treatment	$20		$1.20	$30		
Industrial Waste Treatment	$20		$1.20	$30		
Treatment of Metal Wastestreams	$10		$ .60	$10		
Pretreatment Facility Inspection	$30		$1.80	$30		
Operation and Maintenance of Wastewater Collection Systems, Volume I	$20		$1.20	$30		
Operation and Maintenance of Wastewater Collection Systems, Volume II	$20		$1.20	$30		
WATER (POTABLE)						
Water Treatment Plant Operation, Volume I	$30		$1.80	$30		
Water Treatment Plant Operation, Volume II	$30		$1.80	$30		
Small Water System Operation and Maintenance	$20		$1.20	$30		
Water Distribution System Operation and Maintenance	$20		$1.20	$30		

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

***California State Tax is on the Manual only.**

***SHIPPING (See below) ____________

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***Cost includes shipping via UPS within the continental US. Street address is required for UPS delivery. All shipments out of the continental US must pay additional costs for shipping and handling.

080189

ALASKA, HAWAII, CANADA, GUAM, PUERTO RICO

For Air Parcel Post include $5 Per Manual

Kenneth Kerri, Office of Water Programs, CSU, Sacramento
6000 J Street, Sacramento, California 95819-2694
Phone (916) 278-6142 FAX (916) 278-5959

THIS PORTION MUST BE COMPLETED. PLEASE PRINT.

SHIP TO: ______________________ Attention, if applicable ____________

ADDRESS: ______________________ DAY PHONE: (____) ____________

CITY: ______________________ STATE: ____________ ZIP: ________

STUDENT NAME(S) (If enrolling): ______________________

SOCIAL SECURITY NUMBER: ______________________
(Voluntary. Used for student computer identification of answer sheet and test scores.)
(If enrolling more than one student, attach additional sheet — include social security number for each person enrolling.)

FIFTY-EIGHTH ANNUAL SCHOOL

FOR WATER AND WASTEWATER OPERATORS AND MANAGERS

Monday, September 23 through Thursday, September 26, 1991
Strand Union Building, Montana State University, Bozeman

MONDAY, September 23, 1991

Registration	8:00 a. m.	Registration for Water School (no pre-registration)
Joint Session	9:30	Welcome from Montana State University
		Welcome from Water Quality Bureau
		School Logistics
	9:45	Your Part in a Good Certification Program
	10:15	Repairing the Past/Protecting Our Future
	10:45	When Water Makes You Sick
	11:45	LUNCH
Wastewater	1:00 p. m.	No-Dig Rehabilitation of Sewage Collection Systems
	2:00	Wastewater Treatment Processes
	3:00	BREAK
Water/Wastewater	1:00	Basic Math
	3:00	BREAK
Water	1:00	SDWA Overview
	1:30	VOC and Public Notice
	2:00	Total Coliforms
	2:30	Surface Water Treatment Rule
	3:00	BREAK
Joint Session	3:15	Safety
	4:30	AWWA/WPCF Professional Organizations
	5:00	SOS Materials Distribution

TUESDAY, September 24, 1991

Wastewater	8:00 a. m.	Basics of Process Control
	10:00	BREAK
	10:15	Basics of Process Control (cont'd.)
	11:45	LUNCH
	1:00 p. m.	Special Studies; AA Digester Control
	1:30	Speaker's Choice
	3:00	BREAK
Small Wastewater	8:00 a. m.	Lagoon O & M
	10:00	BREAK
	10:15	Flow Meters
	11:00	pH, DO Meters
	11:45	LUNCH
	1:00 p. m.	Permits, Self-Monitoring
	1:30	Seasonal Discharge: Parallel, Series Operation
	2:15	Control of Weeds at Lagoons
	3:00	BREAK

Water	8:00 a. m.	Corrosion Control
	9:30	Collection a VOC Sample
	10:00	BREAK
	10:15	Total Coliform Sample Collection & Follow-Up
	11:45	LUNCH
	1:00 p. m.	Public Relations and Media Communications
	3:00	BREAK
Joint Session	3:15	Cross Connections
	4:00	SOS Sessions

WEDNESDAY, September 25, 1991

Wastewater	8:00 a. m.	Microscopes
	10:00	BREAK
	10:15	Sludge
	11:45	LUNCH
	1:00 p. m.	Preventive Maintenance
	2:00	Lab Procedures
	3:00	BREAK
Small Water	8:00 a. m.	Wellhead Protection
	9:00	Groundwater Contamination Demo
	9:30	Well Construction
	10:00	BREAK
	10:15	Small Systems Operation
	11:45	LUNCH
	1:00 p. m.	Plan & Spec. Review
	1:20	Storage Tank Inspection and Maintenance
	1:40	Emergency Well and Tank Disinfection
	2:00	Water Audit
	3:00	BREAK
Water	8:00 a. m.	Basics of Filtration Processes and Chemical Addition
	9:30	Polymers
	10:00	BREAK
	10:15	Chemical Feed Calculations - Calibrating Feeders
	11:45	LUNCH
	1:00 p. m.	Turbidity & Calibration of Turbidimeters
	2:00	Jar Test Demo
	3:00	BREAK
Joint Session	3:15	Electricity
	4:00	SOS Sessions

THURSDAY, September 26, 1991

Joint Session	8:00 a. m.	Pumps
	9:00	Pump Curves
	9:30	BREAK
	10:00	Energy Conservation
	11:00	Disinfection
	12:00 p. m.	Wrap-Up and Adjourn
	1:30	SOS Sessions

EXAMINATION NOTICE

ON FRIDAY, SEPTEMBER 27, 1991, 8:30 A.M. TO 12:30 P.M.,

examinations for certification as a Water Distribution Systems Operator, Water Plant Operator, and Wastewater Plant Operator will be administered in BALLROOM C of the STRAND STUDENT UNION, MONTANA STATE UNIVERSITY, BOZEMAN.

The examinations will be given at the conclusion of the annual Water School jointly sponsored by the Water Quality Bureau and Montana State University and held on the MSU campus September 23-26. Attendance at the school is not required in order to take a certification examination. However, anyone planning to take an examination must complete a certification application AND examination registration slip before September 13, 1991, and send it to:

Water/Wastewater Operator Certification
Water Quality Bureau - Room A-206 - Cogswell Building
Helena, MT 59620 (Phone: 444-2691)

Before September 1, application fees payable with the application are: Class 1 - $27; Class 2 - $22; Class 3 - $17; Class 4 - $12; Class 5 - $10. To verify that you plan to take the examination on September 27, 1991, complete the examination registration slip below and remit $5 per examination. Make checks payable to DHES, OPERATOR CERTIFICATION. No pre-registration is required for Water School. Fees for the school are payable to MSU at the time of registration on September 23.

Beginning September 1, 1991, application fees will be $30 per any water distribution and/or water treatment type and classification; and $30 per any wastewater type and classification. Examination fees will remain unchanged at $5 per examination.

PLEASE RETAIN THE UPPER PORTION OF THIS NOTICE.

EXAMINATION REGISTRATION SLIP

(Detach and return with $5 per exam by September 13, 1991)

On September 27, 1991, I will take the examination(s) I have checked:

Type	Class	1	2	3	4	5
Water Distribution (A)		___	___	___	___	___
Water Plant or Well (B)		___	___	___	___	___
Wastewater Plant(C)		___	___	___	___	

*Note: Combination examinations are offered for 2A3B, 3A4B, 4AB and 5AB and require $5 examination fee only.

NAME: ________________ ADDRESS: ________________ SYSTEM: ___________

PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT) 3/09/91

Class 1:
William Anders, Glasgow, 1A*
James Austin, Laurel, 1B-ot*
Charles Briese, Helena, 1A
Bobbie Brunckhorst, Cut Bank, 1C-ot
Brett Darby, Havre, 1C-ot
Virginia Capehart, Forsyth, 1B-ot
William Dell, Laurel, 2C*
Harold Dooley, Havre, 1B-ot*
Mark Fitzwater, Havre, 1C-ot
Jay Frandsen, Helena, 1C
Randy Gebhardt, Havre, 1C-ot
Lance Hale, Great Falls, 1B-ot*
Clinton Houge, Great Falls, 1A-ot
Scott Hunt,, Black Eagle, 1B-ot
Byron Long, Jardine, 1C-ot
John Manion, Kalispell, 1C-ot
Lynn Tera Miller, Havre, 1C-ot
Richard Mohar, Harlem, 1B-ot*
Leo Murr, Havre, 1C-ot
Michael Ogle, Missoula, 1A
Charles Patera, Havre, 1C-ot
Eugene Pizzini, Helena, 1A/1B-ot*
Dale Reeves, Havre, 1A/1B-ot*
Tim Reiter, Laurel, 1C-ot
Lorie Rippley, Havre, 1C-ot
David Schnittgen, North Havre, 1C-ot
David Schultz, Butte, 1A/1B-ot
Tim Schwenk, Missoula, 1A
Robert Seaman, Havre, 1C-ot
Steve Skelton, Havre, 1B-ot*
Henry Snedigar, Havre, 1C-ot*
Cliff Stacy, Havre, 1C-ot
William Thomas, Havre, 1A/1B-ot*
Wayne Willnow, Havre, 1C-ot
Calvin Wilson, Havre, 1B-ot
Richard Wynia, HGavre, 1C-ot

Class 2:
Danny Anderson, Poplar, 2A3B-ot
Daren Higginbotham, Forsyth, 2A*
E. Little Owl, Jr.,Crow Agency 2A
Thomas Olson, Livingston, 2C-ot
Ronald Phifer, Havre, 2A
Anthony Reed, Havre, 2A*
George Ruckel, Kalispell, 2A3B
Kelly Schafer, Havre, 2A
Dave Sund, T. Falls, 2B-ot*

Class 3:
Abe Abraham, Wolf Point, 3C
Vern Adkins, Fromberg, 3C*
Doug Andrews, Kalispell, 3A4B-ot
Roger Bevolden, Harlem, 3A-ot*
Ronald Blackman, Browning, 3A4B
Lori Eby, Great Falls, 3A4B-ot
Sheralyn Edwards, Emigrant, 3C
Blane Gard, Sunburst, 3A4B*
William Haley, Vernal, Utah, 3A*
Robert Hicks, Missoula, 3B*
Jim Jenson, St. Ignatius, 3C*
William Kavanagh, Coram, 3A4B*
E. Little Owl, Jr., Crow Agency,3C*
Amy MacKensie, Great Falls, 3A4B
Cynthia Mathews,Great Falls,3A4B-ot
Walter McElmurry, Lakeside, 3A4B*
Jeff McNabb, Gardiner, 3C-ot
Richard Mohar, Harlem, 3A/3C*
James Morgan, Ronan, 3A
Michael Ogle, Missoula, 3B
Harry Rencurel, Havre, 3C
Timothy Schwenk, Missoula, 3B
Allen Sorge, Rexford, 3C

Class 4:
Vance Brandt, Lambert, 4AB
David Bruner, Ryegate, 4AB/4C
James Fladland, Saco, 4AB/4C
Bill Heinlein, Libby, 4AB
Dorothy Kouba, Circle, 4C*
Jerry Kutzman, Whitefish, 4AB-ot
Richard Moree, Lakeside, 4AB
Blair Nack, Square Butte, 4AB
Russell Rapp, Billings, 4AB
Libby Ann Ray, Gardiner, 4AB*
Steve Rose, Geraldine, 4AB
Kevin Schiele, Kalispell, 4AB
Robert Sorensen, Kalispell, 4AB

Class 5:
Jim Atkinson, Kalispell
William Beckman, Corvallis
Everett Drake, Columbia Falls
Clifford Grant, Helena
Ray Hawley, Missoula
Donna Landis, Kalispell
David Mabbott, Victor
Warren Martin, Broadus
Jerold McGillen, Lakeside
Mike Pasaluk, Corvallis
Larry Perkins, Glendive
Tim Personiua, Billings
Lyle Price, Helena
Christine Ross, Whitefish
Paul Walter, Lewistown
Ernest Walton, Bigfork
Ramon Wielgosh, Glendive

METC UPDATE

by Jan Boyle, METC Coordinator

Greetings!

Well, by the end of August, 1991, the Montana Environmental Training Center conducted 19 of the 29 seminars and workshops planned for 1991. Two of the workshops planned for the spring of 1991 were postponed until the fall and winter. Below is a list of the upcoming METC sponsored seminars, dates and their locations.

-	October 16, 17	Basic Wastewater Lab	Havre
-	October 22, 23	Advanced Surface Water Treatment	Helena
-	October 24, 25	Advanced Surface Water Treatment	Billings
-	November 14	Groundwater Protection	Lewistown
-	November 19	Land Application of Municipal Sludge	Helena
-	November 21	Management Workshop of Administrators, Clerks and Operators	Glasgow
-	December 9, 10	Distribution System Course	Great Falls
-	December 12	Disinfection	Glendive
-	December 17	Safety	Great Falls
-	December 19	Water System Operation	Missoula

We achieved a record attendance at the **Public Relations and Public Notification Requirements Seminar** held in Helena on March 21st. 52 attended in a facility planned for 35 (much to the chagrin of the coordinator!). I know that if I had planned for 50, only 35 would have showed up, right?! This topic seemed to be of special interest to community administrators, what with new regulations coming down involving drinking water. Getting the **right** information out in the **right** manner was an area of interest shared by most in attendance. In my mind, that kind of positive approach builds strength in a community. A community public relations program not only keeps the community informed, but the efforts made to that end lend much credibility to the community administrators who support it.

Two well attended seminars concerned grants and loan for water and sewer projects and the planning and implementation of public works construction projects. These seminars brought speakers with varied expertise in loan and grant programs, public education, planning, contracting, construction, consulting, and operations of the public works. The seminar on **Planning, Constructing, and Operating a Water** or **Sewer Facility** involved 17 speakers. There were some interesting comments from the attendees of these two seminars, gained from a written evaluation process. They would like to see additional seminars of this nature put on more than once throughout the state of Montana. They also recommended 2- and 3-day seminars to cover the material more thoroughly. One observation of a significant nature that I made, involved how some attendees were "enlightened" about a speaker's perspective on a subject area. For example, listening to a contractor talk about the proper process of tackling a public works project brought some insight into the contracting business. They expressed how helpful this was to them.

Bill Bunner's Hazardous Chemical Safety

Another well attended seminar, **Hazardous Chemical Safety**, involved some interesting "visual" demonstrations of topics in this subject area. The speaker of this seminar is a nationally recognized expert in hazardous chemical safety and utilized some interesting demonstrations to get his point across concerning chemical safety. Dry ice, liquid nitrogen, roses (?), lighter fluid, and a five gallon plastic jug were just a few of the items used to demonstrate chemical bonding and stress the importance of chemical understanding in the safety process. Regulatory compliance for hazardous chemical safety was also covered.

Just a quick rundown of some of the activities that are going on at METC. A new and updated Water Quality Resources Library Catalog is in the making. Several new books have been added our library. Examples include the Ken Kerri manuals of operations and some water and wastewater math books which I understand are very good, especially for entry level operators. Another activity that will be taking place is the development of a lagoon module for training. We hope to have this in place very soon. Additional activities include development of a newsletter and of a form that can be utilized by operators who attend training workshops to acknowledge it in their community newspapers.

METC hosted an Advisory Committee meeting in June to express the area of "topics for training for 1992" and expand on the development of a "speaker's bureau." METC's Advisory Committee is composed of 16 members, all coming from diverse backgrounds of expertise - water and wastewater operations, sanitarians, engineers, environmental specialists, rural water organizations, public works officials, and water and wastewater certification. The attendance of 14 of the 16 members reflects a positive attitude on the part of these individuals to achieve a high level of success in getting training out there where it is needed at a level of quality that achieves excellence. METC is committed to that end. The meeting succeeded in generating a list of topics for training and a list of potential speakers identifying their area of expertise. The training of these subject areas reflects both entry level, intermediate and advanced levels. METC is excited about the 1992 training offerings. We welcome any of your ideas and suggestions on training, too. So please feel free to contact me about any of your ideas. I would like very much to visit with you about them. I can be reached at 761-0417. Better yet, come by the office! METC is located at Northern Montana College, Great Falls Campus, 1211 Northwest Bypass, Great Falls, MT 59404.

METC Advisory Committee members discuss training needs

A packed-house at "Public Relations" gets updated on new regulations.

The Mechanics of a Trench Collapse

By

Jack L. Mickle, Ph.D.

Why do several hundred persons die each year in trenches? Why are several thousand injured or maimed? What is it that makes trenching so dangerous? Why, after decades of these accidents, is the situation unchanged?

Hundreds of thous
trenches are open
day in this countr
Statistically, deat
rates per hundred
holes opened hav
over time. The lo
numbers hold som
encouragement, b
give little comfort
someone who has
body broken by a
someone who fee
responsible for th
injury of a fellow
to those who hav
friend or a loved-o
trench collapse.

We all know what
are and why they
created. And we
trenches are nor
for hours at the m
economy of opera
contractors favor
minimum possible
per foot of pipe installed. Worker safety usually dictates more excavation or time to install protective devices. Production and safety goals would seem to be at odds. Yet it's been show time and time again that safety pays. Many would-be contractors, however, remain unconvinced.

Nature shows us that an open trench is an unnatural condition. Except for rock cliffs and river banks, the average landscape displays no vertical or near-vertical slopes. Rock cliffs,

The soil that snuffs out life in a trench collapse is not only suffocating; it is crushing, weighing easily 120 pounds per cubic foot. A cubic yard of soil would be as heavy as an automobile. In the cube of soil shown in figure 1, each one-foot-by-one-foot soil cube contributes 100 pounds to the column's total weight. The stress or load per unit area,is 100 pounds per square foot (psf). At a depth of two feet, a horizontal plane is carrying two cubic feet, or 200 psf. Using the same logic, at a hight of five feet, the
stress is 500 psf,
n.
ses that accrue
mn of soil not only
wn, they push out
ally -- at a force
ly one-half as great
ical stresses. So,
five-foot-tall
rtical (downward)
ts base of 500 psf,
rizontal (or lateral)
50 psf. Were this
mn not held in
ar adjacent
soon collapse.
depicts an idealized
ondition in an open,
bed field. Imagine
number of columns
each other. The
al stresses still
of the same
de as shown in
. The system is in
m and is perfectly

When a trench is cut, the system shown in figure 2 is disturbed. As shown in figure 3, lateral stresses, which, once pushed against the face of the trench wall immediately begins to move into the trench. The movement may not be

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YOUR ARTICLE HERE!

The value of the Big Sky Clearwater is in articles from you - operators, managers, and other industry professionals!

We need your news!

Please contribute thoughts, hints, or offer problems that need solutions. Technical articles developed from research and library resource material are also welcome. How about just jotting down some details on your water system?!

Contributions are welcome and should be submitted by January 1 and July 1 of every year.

Water Quality Bureau
Department of Health & Environmental Sciences
Cogswell Building
Helena, MT 59620

Let us hear from you!

MONTANA SECTION OF

AMERICAN WATER WORKS ASSOCIATION

A MESSAGE FROM YOUR NATIONAL DIRECTOR

Carol and I attended the AWWA National meeting held in Philadelphia, Pennsylvania on June 23-27, 1991. The Board of Director's meeting was held all day on June 23 and the new directors met on June 27.

In addition to the normal business conducted, there are two areas of significance that I would like to elaborate on. The first is the recommendations from the ad hoc committee on officer time commitment. The ad hoc committee was appointed last January to resolve the problem on the amount of time that officers can spend during their four year commitment at section meetings. The committee researched the opinions of each section, including our own, and the Board of Directors adopted the committee's recommendation. In summary, the ad hoc committee indicated that the officers need a balance of time between their three primary priorities during their four year terms. These priorities are:

1. Governance and oversight of the Association.
2. Section meetings and interaction with members.
3. Representation of the Association.

The committee recommended that in the interim of three to four years the current policy continue. The officers annual visit of two nights and interviewing day should be adhered to and supported by the sections of our association. There is some flexibility built in and it is up to the officer to decide when it is in the best interests of both to extend the time. More significantly, in addressing the 21st century needs, the ad hoc committee needs to address the overall problem of officer time commitment.

The other area of significance to our section is the ad hoc committee that was formed to plan for the 21st century. This committee was created a year ago and had their first meeting on April 5, 1991. They have hired a consultant who is going to facilitate the meetings and gather information from the general membership, section officers, councils, committees and board of directors. The committee's goal is to develop a plan of action to follow into the 21st century and see if there are changes that need to be made in order to meet the goals and challenges that are ahead. I will keep you posted on the future recommendations of this committee.

Sincerely,

Richard A Nisbet

Richard A. Nisbet, P.E.
AWWA, Montana Section Director

TO: **Montana WPCA Members**

FROM: **Kristi Kline, Montana WPCA Director**

The first Regional Directors Meeting was held this May 17, 1991. Chuck Sorber, WPCF Vice President; Qunicalee Brown, WPCF Executive Director; and John Thorner, WPCF Public Affairs, conducted the meeting.

Topics discussed included the Name Change for the Federation and where the process was at. There was quite a bit of discussion about the new proposed name "Water Environment Federation." The Board of Control will be voting on this name change issue at the annual WPCF Conference this October in Toronto. Check the July Highlights issue for a position statement paper on the name change issue. Contact me if you have any comments on this issue.

Also discussed were some bylaw changes that the Board of Control will vote on that involved PWOD. Some of the changes included: changing the name of the zone to "region;" the election of a regional PWOD director to coincide with WPCF regions; and length of terms for those PWOD directors.

A new magazine proposal is being studied which would be a general interest magazine aimed at the public. Its purpose would be to get the public involved in water related issues. It would be co-sponsored with the American Water Resources Association and have a format like Natural History or National Geographic magazine. More information will be available later.

The Government Affairs and Public Education/Information offices will be merged into one Department of Public Affairs. Members stressed a need to more adequately influence decision makers at all levels of government and to educate the citizenry. It was felt by combining these two departments those goals could be achieved.

There was a request to set up a Canadian Affairs Committee which could deal with cross boundary issues and provide a more active Canadian thrust for the Federation.

Topics for next year's regional meeting will center around the process of visioning for the future of WPCF. The process would include a facilitator for the day, where we would gather ideas from those attending the regional meetings about the goals and future of WPCF. This process would be conducted for next year's meeting only.

MONTANA WATER POLLUTION CONTROL ASSOCIATION
AND
MONTANA SECTION OF THE AMERICAN WATER WORKS ASSOCIATION

1991-1992 COMMITTEE ROSTERS

Do you have a special project you'd like to see initiated? Do you have ideas or issues you'd like to have addressed? Committees are the way to get your input into the industry and are the backbone of both of these organizations.

Your help with AWWA and WPCA committees is critical to the success of our sections. They are **Montana's Own** and are here to fill the needs of Montana's systems, operators, engineers and managers. A great deal of momentum is building in several areas - school education programs through the Public Information Committee, Operator recognition and appreciation through the Small System's Committee, and awareness of new OSHA requirements through the Safety Committee. Much, much, more is going on but a lot remains to be done.

Please take a look at the committees listed and contact the committee chair of the one (or more) you're interested in. All it takes is a phone call!!

MSAWWA/MWPCA COMMITTEES

SAFETY AND HEROISM
Dick Pedersen, Chairman 444-1373

RESOLUTIONS
Mark Richardson, Chairman 232-3462

PUBLICATIONS AND TECHNICAL PAPERS
Donna Jensen, Chairperson 444-4549

PROGRAM
Donna Jensen, Co-Chair 444-4549
Tim Hunter, Co-Chair 721-0111

SECTIONS DIRECTORY
Leonard Willett, Co-Chair 442-9920
Mike Garrity, Co-Chair 442-9920

HISTORICAL
Tim Berry, Chairman 442-3050

SCHOLARSHIP
Joe Steiner, Chairman 657-8352

GOVERNMENT AFFAIRS
Jim Melstad, Co-Chairman 444-2406
Scott Anderson Co-Chairman 444-2406

MANUFACTURERS REPRESENTATIVES
Mike Richards, Chairman 728-1950

PUBLIC INFORMATION
Kristi Kline, Chairman 265-9031

JOINT EDUCATION
Steve Ruhd, Co Chair 278-5821
Craig Brawner, Co Chair 586-3321

MSAWWA COMMITTEES

SMALL SYSTEMS COMMITTEE 1990-1991
Mr. Dave Haverfield, Chairman . . 273-2733

MEMBERSHIP 1990-1991
Ms. Michele Marsh, Chairperson . 443-7326

HONORS AND AWARDS 1990-1991
Mr. Terry Richmond, Chairman . . 752-2216

CONSTITUTION AND BY-LAWS
Mr. Ralph Dunahoo, Chairman . . 278-5821

MWPCA COMMITTEES

HONORS AND AWARDS
Mr. Barry Damschen, Chairman 449-8627

MEMBERSHIP
Mr. Fred Wendt, Chairman 723-8262

LONG RANGE PLANNING COMMITTEE
Scott Anderson, Chairman 444-2406

1991-1992

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752-2216

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259-5036

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Helena, MT 59620
444-2406
FAX 444-1374

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Conrad, MT 59425
278-5821

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Water Quality Bureau
Cogswell Building
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Helena, MT 59620
444-4549

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Billings, MT 59106
245-6354

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728-1880

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Superintendent
City of Havre WWTP
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Water Quality Bureau
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994-6130

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723-8262, Extension 351

PWOD Director
Mr. Tim Hunter
Superintendent
Sewer Division
201 West Spruce
Missoula, MT 59802
721-0111

WHO'S MINDING THE WELL?

As long as the water runs cool and clear when you turn on the tap, most of us give little thought to the condition of our public water wells. But, Carole Mackin is spending most of her time thinking of nothing else.

Carole has recently joined the Water Quality Bureau in Helena. She was hired to put together Montana's Wellhead Protection Program.

If you are like most Montanans, you have just asked yourself, "What is a wellhead and why does it need protection?" Well, part of Carole's job is to explain that to folks.

A wellhead is the area both above and below ground that supplies water to a well. It is kind of strange to think about well water coming from above ground. But, once you think about it, it makes sense and you begin to see how well water might need protecting.

Protection is needed from improperly installed septic systems, overuse of pesticides and fertilizers on lawns and crops, improper dumping of motor oil and household chemicals, leaking underground storage tanks, a poorly designed landfill, and accidental chemical spills from pipelines and tank trucks. The list goes on and on.

The important thing that Carole hopes to get across to people is this: "When I point my finger at people and accuse them of polluting our wells, three fingers are pointing back at myself. We can't expect to protect our ground water if we go around looking for the bad guys and forget to change some of our own ways."

Everyone is doing something that could pollute the ground water. The trick is to discover what that is and find a safer way.

One excellent way for a community like yours to assure its public water supply will remain clean and wholesome, is to establish a Wellhead Protection Area. Once the community has decided how wide that area should be, they look at who is doing what within that boundary. Again, no one points any fingers. Instead, they work together to identify problems and find solutions that make sense for everyone.

How can you get started? It all begins with community members who care enough to volunteer their time and ideas. Then you call Carole at 444-2406 and she will fill you in on what resources are available and what other communities have done with limited funds but lots of determination.

Eventually, everyone in the community, young and old, should get into the action. School children with computer savvy will be able to help immensely. Scouts, 4-H and Senior Citizens can create projects and activities to get everyone working toward the goal of a safe drinking water supply.

Sounds like fun, and it can be. Like anything else that is worth doing, it will require a lot of hard work with that wonderful sense of accomplishment when the Wellhead Protection Plan is finally in place.

PROTECTING GROUND WATER SUPPLIES WITH A WELLHEAD PROTECTION PROGRAM

Wellhead protection has been simmering on the back burner for the last few years in Montana. But now it's moved to the front burner and the Water Quality Bureau is ready to turn up the heat.

Wellhead protection is a program designed to prevent contamination of any public drinking water supply that comes from wells. The Safe Drinking Water Act of 1986 encourages each state to establish a Wellhead Protection Program. The EPA has nationwide responsibility to develop and support the program, but state and local governments will carry the ball.

The Water Quality Bureau began Montana's program by collecting information on public water supply wells. Then criteria were developed to determine which wells were most vulnerable to contamination. Finally, all the information was fed into a computer able to display it geographically (GIS).

In the meantime, Missoula got excited about wellhead protection and will be the first community in Montana to put together a protection program. Their aquifer is highly vulnerable to contamination from storm drains, gasoline pipelines and storage tank leaks, improper pesticide disposal, effluent from their landfill, and cleaning solvents.

Citizens in several other communities are also worried about their drinking water and are anxious to begin a wellhead protection program. They have taken the first step.

Launching a wellhead protection program involves five steps:

- 1. Form a community planning team;
- 2. Define the land area to be protected;
- 3. Identify and locate potential contaminant sources;
- 4. Manage the protection area;
- 5. Plan for the future.

Future articles will look more closely at each step. In the meantime, if this program sounds like just what your community needs, get started on step number one.

NEW MONTANA LEGISLATION WILL AFFECT ALL PUBLIC WATER SUPPLIES!!

The 1991 Montana Legislature passed Senate Bill 407. This bill will assess fees to all public water suppliers. Money generated from the fees will be designated for support of Montana's Public Water Supply Program and a state-wide groundwater assessment initiative.

In the last issue of the *Clearwater* we ran a summary of the Public Water Supply (PWS) Task Force's study and conclusions for the fate of the PWS program. The Task Force study was prompted by the need to increase resources and staff for the PWS program, or lose primacy and return enforcement of drinking water laws to EPA. The Task Force recommended retaining the PWS Program and recognized additional funding was necessary to do so. Although none of the Task Force members were wild about the idea, they concluded a fee assessed to users was the best way to fund the program since general fund monies were not available.

The 1991 Legislature agreed with the Task Force and determined the amount of the fees to be assessed. The fees were established to be no more than an annual fee of $2.25 per service connection per year for community public water systems, with a minimum of $100.00; an annual fee of $100.00 for non-transient non-community public water supplies; and an annual fee of $50.00 for any other non-community public water supply.

Details on assessing the fees, fee collection and other issues will be forthcoming in a special mailer from the Water Quality Bureau (WQB). The WQB is currently in the process of establishing the rules to implement the fees through the rule-making process. This process allows for input from the effected public -- please keep an eye out for this information and comment on the proposal!

If you have any questions on the Task Force findings or the fee proposal contact the PWS Program at 444-4549. These rules may affect you as early as January, 1992.

WELLHEAD PROTECTION VIDEO AVAILABLE

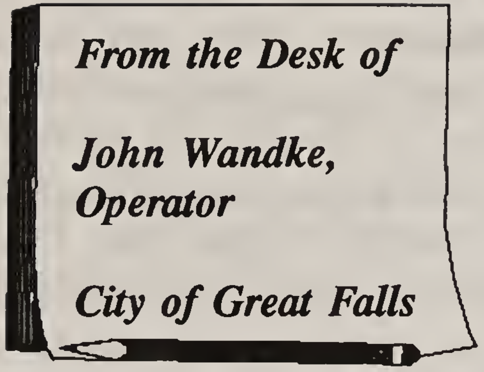
Three communities are featured in the latest video from the EPA entitled "Power to Protect." Each community had a unique reason to establish a wellhead protection program for their water supply wells.

Community leaders tell of their problems and successes. They also offer advice on how to get started on your wellhead protection program.

The VHS video is 32 minutes in length and available free of charge. All you need to pay is the return postage.

The video can be ordered from the Audio-Visual Library at the Department of Health and Environmental Sciences. If you would like to check it out, call Nena Howe between 8:00 a.m. and 12:00 noon at 444-5277.

You can also call a 24-hour answering machine at 444-4764. At the beep, state your name, mailing address, city and zip, your telephone number, the name of the video -- "Power to Protect" and the date you would like to show the video.



From the Desk of

John Wandke,
Operator

City of Great Falls

How much HTH (with 65% available chlorine) will I need to give me a 100 ppm chlorine solution to disinfect 800 feet of 6 inch pipe? Don't you hate it when someone asks you something like that as though you should just automatically know? There is a simple calculation you can perform, though, which can allow you to more easily come up with the right answer to many questions like this:

$$x = 0.000209(r^2)(L)$$

where "x" is the pounds of 65% chlorine product,
"r" is the radius of the pipe in inches, and
"L" is the length of the pipe in feet.

So the answer to the above question becomes (0.000209)(9)(800) = 1.5 lbs.

DERIVATION:

If "y" = pounds of water in a pipe, then

$$y = \left[\frac{(\pi\ r^2)(12L)}{231\ \text{in}^3/\text{gal}} \right]\ 8.34 = 1.361r^2L$$

Let x_1 = lbs of 100% chlorine to be used in a 100 ppm solution:

then, the ratio $\dfrac{x_1}{y}$ must be equal to $\dfrac{100}{1{,}000{,}000}$, so

$$(x_1)(1{,}000{,}000) = (y)(100)$$

$$x_1 = \frac{(100)(y)}{1{,}000{,}000} \text{ and since } y = 1.361r^2L$$

$$x_1 = \frac{(100)(1.361r^2L)}{1{,}000{,}000} = 0.0001.361r^2L$$

for a 65% chlorine product, multiply this by $\dfrac{1}{0.65}$ to get $x = 0.000209r^2L$

for a 70% chlorine product, multiply this by $\dfrac{1}{0.70}$ to get $x = 0.000194r^2L$

for a 5% chlorine product, multiply this by $\dfrac{1}{0.05}$ to get $x = 0.00272r^2L$

If you're used to using only one type of chlorine product, you'll only need to memorize one formula.

OUT OF COMPLIANCE AND IN TROUBLE ... NOW WHAT? – Part One

[Reprinted from AWWA's "Outreach", May/June and July/August 1991]

Your system has not been able to comply with the Safe Drinking Water Act (SDWA) and the mail is bringing you explanations, warnings, and possibly citations that the problem needs to be solved.

It is a very natural, but dangerous, inclination to ignore the notification or the problem. There are more and more people, operators, managers, and water authorities who are finding out that ignorance can be very, very costly. Ignoring warnings from regulators and the problem itself are the worst ways to handle noncompliance.

Here are some general guidelines for what you can do if your system is on the noncompliance list.

- When you receive **any mail** from state or U.S. Environmental Protection Agency (USEPA) regulators, **OPEN IT IMMEDIATELY**, read it, and pass it on to those who can correct the problem.

- If the problem is **MINOR**, such as a sample not taken or a report not mailed, take care of it right away. The longer you allow a minor problem to persist, the bigger it gets in your mind and in the regulator's mind. Notify the primacy agency, the person who wrote the letter, that you're taking action. Be sure to make notes and keep copies of everything you did.

- If the problem is **MAJOR**, such as a maximum contaminant level (MCL) violation, make a preliminary plan of action and present it to the people you work for. This may be the city council, the water board, the commissioners, or the owner.

- **Call the primacy agent**, the person who wrote the letter, and let them know that you're working on a plan. Ask if they have any helpful suggestions. Can they give guidance? Would it be helpful if they attended your next meeting?

  Are there other sources who can help you -- an engineer; AWWA, either the section of headquarters; state rural water association? The scope of the problem will dictate who you should call. Remember, a telephone call is inexpensive; it is better to make too many rather than too few calls.

- **Present the plan** for consideration.

- **If the plan is accepted**

  - Notify the primacy agency by registered mail and keep a copy in your file. Expect to receive comments back.

  - Start putting the plan to work. Provide the agency with progress reports until the project is completed.

- **If the plan is not accepted**, outline what the consequences will be. This is serious. The system must be in compliance or you will be held responsible. There are several cases on record in which operators have lost their licenses and have had to pay for their own legal defense when they were charged with "negligence" or "fraud." (See case histories.)

- Recommend that the water system seek legal advice.

- Explain again how you recommend that the problem be handled to avoid the fines and legal consequences of "willful neglect." Willful neglect is a criminal violation.

What is negligence? You will be considered negligent if you don't operate the system in generally accepted ways. (There are books and training courses that will tell you what is generally acceptable. If you are a certified operator, you should know what is generally acceptable, because your test is based on generally accepted practices.)

Some examples of negligence might be: failure to fill out and mail all required reports; failure to take samples; and failure to follow required schedules. Also, it would be negligent to allow gross contamination or unacceptably high trihalomethane (THM) levels.

What is fraud? You might be charged with fraud if you manipulate data, for example, if you have no data for a required reporting item and you just make up the number; if you have data that is not acceptable and you put in a different number (falsify the data); or if you instruct your employees to falsify data. In the last example, both of you are liable and can be prosecuted for fraud.

The fines and penalties for fraud and negligence are severe; the consequences could be the loss of your license and your job. Please be forewarned that enforcement cases are in process RIGHT NOW and that you can save yourself and your system a lot of grief by taking compliance seriously.

CASE HISTORIES

The State of Colorado reports the following cases:

A water and wastewater district was charged with falsification of records. One operator lost certification and his job, three others were cited but did not lose their certification.

One district falsified NTU (turbidity) records. The manager instructed the operator to register amounts under 1, regardless of what the turbidimeter indicated. The operator's license was revoked. The manager is facing criminal charges.

OUT OF COMPLIANCE AND IN TROUBLE ... -- Part Two

Most operators are finding that because of the new drinking water regulations more of their time is spent on sampling and reporting. In addition, more of their time is needed to stay informed and to understand each new regulation. AWWA regularly receives letters and calls for help and information about compliance issues. Following are some of the most frequently asked questions and the answers to these questions. Remember--there is no substitute for knowing what you are doing and why you are doing it.

Q: Are small systems singled out for compliance enforcement?

A: No. The method most often used to find noncomplying systems does not taken into account the size of the water system. This method involves a computer data verification search. The computer identifies "irregularities" in all reports that have been submitted to the regulatory agencies. These irregularities may be caused by honest mistakes, changes in the system, or willful changes in what should have been reported.

Irregularities occur in systems of all sizes. The list of irregularities is then studied to identify the irregularities that need to be followed up and those that can be explained by reviewing other information that was submitted with the original report (footnotes, etc.). The entire Safe Drinking Water Act (SDWA) relies on good reporting practices, and uses poor reporting practices to identify problems.

Q: Why are some systems treated differently than others?

A: The response you give to the telephone call or mail notification that follows a reporting irregularity sets the tone for what happens next. Your response could affect the way you are treated by enforcement officials.

In some instances, a mistake was made. This can happen in both small and large systems. Whatever the cause, be honest. Your regulatory agency can work with you to solve the problem if you are honest and willing to improve your operations and to protect the public. If the regulator feels that you are not interested in doing your part or that the regulators are not being taken seriously, the situation can quickly go from bad to worse (see May/June issue of Outreach.

Q: We've had no disease outbreaks or complaints from our users. Why do the regulators think we have a problem? Why should the regulations be so strict for our system?

A: Put yourself in the place of the water user and consider what kind of water might be served to you if there were no regulations. Consider all the septic field and the wastewater discharges that could interfere with wells in your area and other local water sources. What about the pesticides and other unwanted materials that could be washed into local water sources? Everyone has a right to safe water from their tap. If you fail to do the monitoring and testing required to prove that the water is safe, how can you tell your users that their water won't harm them? Do you go back to the "it looks good" way of thinking? The idea that water that looks good and pure must be OK doesn't work anymore. Because water quality means more than the way water looks, the SDWA was passed to ensure high-quality water for all water users.

Q: Can we be taken to court if noncompliance persists?

A: Yes, unfortunately many noncompliance cases end up in court. Money spent on legal fees to solve compliance problems is often wasted. In most cases, money should be spent for operational improvements. Spend money to defend yourself if you've done everything required by law and still find your system on the noncompliance list. If the regulators are right and your operations should be improved through the purchase of monitoring equipment, increased salaries for improved operations, or other operational changes, spend the money on these needed improvements.

Q: What if we don't have the money to make system improvements?

A: There are several options you can explore to pay for system improvements. If you need help, call the AWWA Small Systems Department; we'll help you find assistance in your area--people who can help you determine what's available to you and help you decide what course of action you should take.

Q: Our system is run entirely by volunteers. Surely the regulators cannot enforce the same rules as they do on paid workers?

A: Some systems claim that volunteer operators and board members can't be expected to do more than what they are already doing. The water user and the regulator should not accept this argument. If a person is charged with the treatment of water, that person better take their job seriously, whether he/she is a volunteer or a paid worker. You wouldn't want to have an unsafe or incompetent firefighter on your volunteer fire department. By the same token, you don't want an unsafe or incompetent water operator on your water crew.

Volunteers are great people who can save you money, if their jobs are done right. If a volunteer is responsible for a noncompliance action, consider what that volunteer has cost you rather than what the volunteer has saved you. There is no better protection from unexpected noncompliance than a certified operator (volunteer or paid) who takes pride in a job well done.

Remember, the SDWA is a law you must live with; if you break this law you must be willing to accept the consequences. The bottom line is that breaking a law, including the SDWA, is a bad idea.

DRINKING WATER REGULATIONS -- A LOOK TO THE FUTURE

by Dean Chaussee, EPA

In 1986, the Safe Drinking Water Act (SDWA) was reauthorized. Congress was quite concerned at that point about what they felt was a lack of progress by EPA in setting standards or maximum contaminant levels (MCLs) for the many contaminants that were being found in drinking water systems across the country. In order to move that process ahead at a quicker pace, Congress actually specified in the revised SDWA the number and even the names of those contaminants which they wanted MCLs set for. In 1986, MCLs had been established for 23 contaminants. The 1986 Act specified that MCLs be set for 83 contaminants by 1989.

EPA has been quite busy trying to meet the schedule established by Congress. Even though all the deadlines have not been met, the flood of regulations -- MCLs and monitoring schedules -- seems staggering. The Montana Board of Health and Environmental Sciences recently adopted the rules establishing state standards for **volatile organic chemicals**, sometimes referred to as VOCs. They also added rules to cover the **public notification** requirements for violations of the drinking water regulations. In that same session, they adopted **surface water treatment** rules, which will directly affect all systems using surface water or "ground water under the influence of surface water" and also, the **total coliform rule** which changes the bacteriological testing conducted by all the State's drinking water systems. You should have received copies of summaries of all these rules from the Water Quality Bureau (WQB) in January of this year. These summaries also appeared in the last Clearwater.

In the following pages, I will very briefly cover several new regulations which have just been issued by EPA, as well as one which has just been proposed. Look for more complete summaries from the Water Quality Bureau soon.

PHASE II

The term "Phase II" is being used by EPA to describe a collection of regulations which deals with 38 inorganic and synthetic organic contaminants. MCLs were finalized for 33 of the contaminants in January 1991. Five more MCLs were then finalized in July 1991. Phase II set 27 new MCLs and revised 11 more. In addition to MCLs and maximum contaminant level goals (MCLGs), the rules also include provisions for:

- Standardized monitoring schedules of 3/6/9 year cycles
- Analytical methods and lab performance requirements
- Best Available Technologies (BATs) for compliance with MCLs
- Secondary standards for silver and aluminum
- Mandatory health effects language for public notices
- Monitoring of 30 additional unregulated contaminants

These regulations are estimated to reduce the exposure of three million consumers to the regulated contaminants and result in an estimated reduction of 73 cancer cases per year.

Phase II includes provisions for public water systems to obtain waivers from sampling for all of the contaminants specified in the rules except for nitrate and nitrite. However, the basis for many of these waivers will be a vulnerability assessment conducted by the Water Quality Bureau (WQB). The availability of the waivers may depend on the resources the WQB has to visit each system. Public water systems will have to apply for waivers the year prior to when the monitoring will be due. Watch for additional information on this process from the WQB.

The contaminants and the established MCLs covered in Phase II are listed at the end of this article. These MCLs will become effective in July 1992. At that time the current MCLs cease to be in effect.

LEAD & COPPER

New standards for lead and copper were published by EPA in June 1991. EPA has been attempting to reduce the public's exposure to lead through several different approaches -- the removal of lead from gasoline, the banning of the use of lead in paint, and now through the reduction of lead in drinking water.

These regulations will eventually reduce lead exposure for approximately 130 million persons. It is expected that 600,000 children will have their blood lead content brought below the EPA's level of concern. In the past, the MCL for lead has been set at 50 ppb (parts per billion). Although there is not a specified MCL for lead under the new standard, the goal (now called action level) is for at least 90 percent of monitored households to have lead levels of 15 ppb or less. The copper action level is set at 130 ppb. The regulation will focus on the main cause of lead and copper in drinking water -- corrosion from pipes, solder and fixtures between the water source or treatment and the consumer's tap.

Monitoring for lead and copper will begin on the following schedule:

Date	System size (Pop. served)
January 92	Large (> 50,000)
July 92	Medium (3,300 to 50,000)
July 93	Small (< 3,300)

Sample sites must be chosen carefully from high risk locations:

- homes with lead solder installed after 1982
- homes with lead pipes
- homes with lead service lines

One liter samples will be taken from these taps after the water has remained in the pipes, motionless, for at least 6 hours.

The number of sampling sites is shown below. One sample for lead and copper analysis should be taken from each of the sites during each 6-month period. All public water systems (PWS') which meet the lead and copper action levels for two consecutive six-month monitoring periods may reduce the number of sampling sites.

System Size (pop)	No. of Sampling Sites (initial monitoring)	No. of Sampling Sites (reduced monitoring)
10,000 - 100,000	60	30
3,301 - 10,000	40	20
501 - 3,300	20	10
101 - 500	10	5
<100	5	5

If more than 5 percent of the samples exceed the lead or copper action levels, a number of activities are required:

1. All public water systems must deliver the EPA-developed public education program to their customers within 60 days.

2. All systems will be required to monitor for the following:

   pH
   calcium
   orthophosphate
   water temperature
   alkalinity
   conductivity
   silica

3. Large water systems will be required to conduct studies on the effectiveness of several types of corrosion control solutions.

4. Small and medium systems will be required to submit a recommendation for optimal corrosion control treatment to the Water Quality Bureau.

5. After treatment is specified by the State, the water system will have 24 months to install corrosion control treatment.

All systems that continue to exceed the lead action level after installing optimal corrosion control treatment must replace lead service lines that are contributing to the problem within a 15 year schedule.

RADIONUCLIDES (Proposed regulations)

EPA is currently seeking comments on the following proposed regulations. The current proposal calls for a final rule to be promulgated in April 1993 and become effective in October 1994. Comments are due to EPA October 16, 1991.

As proposed, these regulations, when implemented nationwide, will reduce the exposure of 20 million consumers to the regulated contaminants and result in avoidance of an estimated 83 cancer cases per year. The contaminants targeted by this proposal are Radon-222, Radium-226, Radium-228, and Uranium. All are known to cause cancer.

Uranium is also known to be toxic to the kidneys. Drinking water systems that rely on ground-water supplies are more likely to be affected by this proposal.

The MCL's being proposed are as follows:

Radon-222	300 pCi/l (pico Curies per liter)
Radium-226	20 pCi/l
Radium-228	20 pCi/l
Uranium	20 ug/l (micrograms/liter) (about 30 pCi/l)
Beta & photon emitters	4 mrem ede/yr (millirems effective dose equivalent per year)
Adjusted gross alpha	15 pCi/l

The regulation will also include:

- Monitoring, analytic methods and lab requirements
- Best Available Technologies (BAT's) for compliance with the MCL's
- Mandatory health effects language for public notices
- Reporting and recordkeeping requirements
- Unregulated contaminant monitoring for lead-210

One of the major concerns of small ground water supplies will no doubt be the low level currently suggested for the Radon MCL. We expect that many PWS's will have to provide treatment to reduce Radon levels. The BAT for Radon is aeration.

Radon comes from the natural break-down of uranium in soil, rock and water. It's a volatile gas and the primary health hazard comes from breathing air containing radon. Radon present in drinking water is released into indoor air during household water use such as showering and washing clothes. EPA estimates that indoor radon may result in 8000-40,000 lung cancer deaths annually, but only 5 percent of this probably comes from drinking water.

A summary of the radionuclide regulations can be obtained by contacting Gary Wiens at the Water Quality Bureau.

This synopsis of upcoming regulations is a brief summary of complex rules. More details will be provided as the time for implementing the rules approaches. As with all SDWA regulations, EPA establishes the rules and the state of Montana must adopt rules no less stringent in order to retain enforcement authority. If there is a lag between the EPA effective date and when Montana adopts them, public water supplies must still comply as of the EPA date.

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Questions about proposed or existing federal Safe Drinking Water Act regulations? Call the SDWA Hotline at 800-426-4791 (EST) to obtain information.

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CONTAMINANTS AND ESTABLISHED MCLS COVERED IN PHASE II

Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) Final MCL	EPA Standards (mg/l) Current MCL	Sources
INORGANICS				
Asbestos	benign tumors	7 MFL[1]	-	natural mineral deposits; also in Asbestos/Cement (A/C) pipe
Barium	circulatory system	2	1	natural mineral deposits; oil/gas drilling operations; paint and other industrial uses
Cadmium	kidney	0.005	0.01	natural mineral deposits; metal finishing; corrosion product in plumbing
Chromium	liver/kidney, skin and digestive system	0.1	0.05	natural mineral deposits; metal finishing, textile, tanning and leather industries
Mercury	kidney, nervous system	0.002	0.002	industrial/chemical manufacturing; fungicide; natural mineral deposits
Nitrate	methemoglobinemia "blue-baby syndrome"	10	10	fertilizers, feedlots, sewage; naturally in soil, mineral deposits
Nitrite	methemoglobinemia "blue-baby syndrome"	1	-	unstable, rapidly converted to nitrate; prohibited in working metal fluids
Total Nitrate/Nitrite	------------------	10	-	----------------------------------
Selenium	nervous system	0.05	0.01	natural mineral deposits; by-product of copper mining/smelting

[1] MFL = million fibers per liter, with fiber length > 10 microns.

Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) Final MCL	EPA Standards (mg/l) Current MCL	Sources
VOLATILE ORGANICS				
o-Dichlorobenzene	nervous system, lung,liver, kidney	0.6	-	industrial solvent; chemical manufacturing
cis-1,2 dichloroethylene	nervous system liver, circulatory	0.07	-	industrial extraction solvent
trans-1,2 dichloroethylene	nervous system, liver, circulatory	0.1	0.1	industrial extraction solvent
1,2 Dichloropropane	probable cancer, liver, lungs, kidney	0.005	-	soil fumigant; industrial solvent
Ethylbenzene	kidney, liver, nervous system	0.7	-	present in gasoline & insecticides; chemical manufacturing
Monochlorobenzene	kidney, liver, nervous system	0.1	-	pesticide manufacturing; metal cleaner; industrial solvent
Styrene	liver, nervous system	0.1	-	plastic manufacturing; resins used in water treatment equipment
Tetrachloroethylene	probable cancer	0.005	-	dry cleaning/industrial solvent
Toluene	kidney, nervous system, lung	1	-	chemical manufacturing; gasoline additive; industrial solvent
Xylenes	liver, kidney, nervous system	10	-	paint/ink solvent; gasoline refining by-product; component of detergents

Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) Final MCL	 Current MCL	Sources
PESTICIDES and PCB's				
Alachlor (Lasso)	probable cancer	0.002	-	herbicide on corn and soybeans; under review for cancellation
Aldicarb (Temik)	nervous system	0.003	-	insecticide on cotton, potatoes; restricted in many areas due to groundwater contamination
Aldicarb sulfone	nervous system	0.003	-	degraded from aldicarb by plants
Aldicarb sulfoxide	nervous system	0.003	-	degraded from aldicarb by plants
Atrazine (Atranex, Crisazina)	reproductive and cardiac	0.003	-	widely used herbicide on corn, and on non-crop land
Carbofuran (Furadan 4F)	nervous system and reproductive	0.04	-	soil fumigant/insecticide on corn/ cotton; restricted in some areas
Chlordane	probable cancer	0.002	-	soil insecticide for termite control, corn, potatoes; most uses cancelled in 1980
Dibromochloropropane (DBCP, Nemafume)	probable cancer	0.0002	-	soil fumigant on soybeans, cotton; cancelled in 1977
2,4-D (Formula 40 Weedar 64)	liver, kidney, nervous system	0.07	0.1	herbicide for wheat, corn, rangelands
Ethylene Dibromide EDB, Bromofume)	probable cancer	0.00005	-	gasoline additive, soil fumigant, solvent cancelled in 1984; limited uses continue
Heptachlor (H-34, Heptox)	probable cancer	0.0004	-	insecticide on corn; cancelled in 1983 for all but termite control
Heptachlor epoxide	probable cancer	0.0002	-	soil and water organisms convert heptachlor to the epoxide

		EPA Standards (mg/l)		
Contaminants	Drinking Water Health Effects	Final MCL	Current MCL	Sources
Lindane	nervous system liver, kidney	0.0002	0.004	insecticide for seed/lumber/ livestock pest control; most uses restricted in 1983
Methoxychlor (DMDT, Marlate)	nervous system liver, kidney	0.04	0.1	insecticide on alfalfa, livestock
Polychlorinated Biphenyls (PCBs)	probable cancer	0.0005	-	electrical transformers, plasticizers; banned in 1979
Pentachlorophenol	probable cancer liver, kidney	0.001	-	wood preservative and herbicide; non-wood uses banned in 1987
Toxaphene	probable cancer	0.003	0.005	insecticide/herbicide for cotton, soybeans; cancelled in 1982
2,4,5-TP (Silvex)	nervous system liver, kidney	0.05	0.01	herbicide on rangelands, sugarcane golf courses; cancelled in 1983
TREATMENT TECHNIQUES				
Acrylamide	probable cancer, nervous system	0.005 percent dosed at 1 mg/l	-	flocculents in sewage/ wastewater treatment
Epichlorohydrin	probable cancer, liver, kidney, lungs	0.01 percent dosed at 20 mg/l		epoxy resins and coatings, flocculents used in treatment

Membership Application

Water Pollution Control Federation
601 Wythe Street
Alexandria, Virginia 22314-1994

Association
Montana Water Pollution Control Association

Use this application to join the Water Pollution Control Federation and your local Member Association. Simply complete this application and return it to the address below. Along with your monthly publications, you are also entitled to group insurance, technical assistance, discount on technical publications, and much more!

Please print.

First Name, Middle Initial (11) | Last Name (16) | (Jr., Sr., etc.) (3)

Mailing address ☐ Business or ☐ Home

Business Name (if applicable) (30)
Street or P.O. Box (30)
City (20) | State (2) | Zip Code - (9)
Area Code—Telephone - - (10) | Country (If Outside U.S.) (16)

WPCF Sponsor (Not Required) (28) | Sponsor's Member I.D. Number (6)

Employer Code (2)

- 11 – Local/Regional Government/Agency
- 13 – State/Interstate Government/Agency
- 16 – Federal Government/Agency
- 21 – Consulting Firm (Engineering/Other)
- 25 – Wastewater Equipment/Material/Supplier
- 27 – Industry
- 28 – Construction Contractor
- 31 – Educational Institution
- 61 – Other (Please specify): ____________

Education Code (1)

- 1 – Less than High School
- 2 – Training Courses, Short School
- 3 – High School
- 4 – Attended College
- 5 – Completed Junior College
- 6 – Bachelor's Degree
- 7 – Advanced Degree

Membership Categories

	☐ **Active**	☐ **Operations Division**	☐ **Student**	☐ **Corporate**
	For individuals involved or interested in the advancement of knowledge pertaining to water quality.	For individuals working on a day-to-day basis (or retired from) in a wastewater collection, treatment, or laboratory facility.	For individuals enrolled at least half-time in a college or university.	For companies engaged in the design, construction, operation or management of water quality systems.
Dues	$ 70.00	$ 40.00	$ 19.50	$ 180.00
Journal	Included	☐ $30.00	Included	Included
Highlights	Included	☐ $15.00	Included	Included
Forum	☐ $12.50	Included	☐ $12.50	Included
TOTAL	$ ______	$ ______	$ ______	$ ______

Method of Payment

☐ Check Enclosed—Make check payable to WPCF.
☐ Charge my ☐ VISA ☐ MasterCard ☐

Account Number ______________________ Exp. Date

Signature ______________________ ( ) Daytime Phone No.

Send Completed Application and Payment to:

WPCF, Member Records
601 Wythe Street
Alexandria, Virginia 22314-1994

For more information, call (703) 684-2452

Postal Requirement: Dues allocated for publications when included in membership: *JWPCF* — $15; *Highlights* — $3; *Operations Forum* — $5.

SDWA REGULATIONS:
AWWA CAN HELP YOU BE BETTER PREPARED

Dear Future Member:

The Safe Drinking Water Act (SDWA) regulations are upon us. And some people are better prepared than others to confront and comply with the continuing onslaught of regulatory requirements.

It is clear that current and future SDWA regulations are having a profound impact on all U.S. water systems -- no matter how small, no matter how large.

Are you prepared to meet the challenges that lie ahead? Are your facts reliable? Can you really have confidence in your information sources?

American Water Works Association (AWWA) members are prepared for the future. They have the most up-to-date information available. They have the best minds in the water industry working for them. They are better equipped to make important decisions to best serve their local water supplies and communities.

You may think your utility will not be affected by SDWA regulations. You may think your job as a utility manager, consulting engineer, or even a scientist or manufacturer will not be dramatically affected. The truth is . . . you will be affected. You need to be ready. And we'll make you ready.

As a water industry professional, you need AWWA's information to help you avoid making wrong and costly decisions.

If you have any doubts about your ability to make the most informed decisions, join AWWA right now. We've led the water industry for well over a century, and today, the need for vital information is greater than ever. AWWA is filling that need -- better than ever.

AWWA is the clearinghouse for all technical information associated with drinking water issues. This wealth of accumulated facts and data can be of immense benefit to you. To take advantage, you need to join AWWA today.

AMERICAN WATER WORKS ASSOCIATION
INDIVIDUAL MEMBERSHIP APPLICATION

Complete this form and mail to:
AWWA / 6666 W. Quincy Avenue / Denver, CO 80235
(303) 794-7711 • FAX (303) 794-7310

AWWA USE ONLY

PLEASE PRINT OR TYPE

Last Name ______ First Name (and middle initial) ______

Mailing Address ______

City ______ State/Province ______ ZIP/Postal Code ______

Area Code ______ – Telephone ______ – ______ Area Code ______ – FAX ______ – ______

Title ______

Employer's Name (If not already in mailing address) ______

Applicant's Signature ______ Date ______

Signature of AWWA Member Endorsing Application (Optional) ______ Endorsing Member Number ______

ANNUAL DUES:

$65/Active Grade Code 02	**$30/Affiliate** Grade Code 06 (For operator level personnel or employees of small utilities)	**$22/Student** Grade Code 14 (Must be enrolled and carrying at least 10 credit hours)

ANNUAL DUES $ ______

New England Assessment* ______

Multi-Section Option (other than own) ______

TOTAL DUE $ ______

If you have been a member of AWWA before, indicate dates here: ______

Make check payable to AWWA (Canadian funds add 20%).

☐ MasterCard ☐ VISA ☐ Diner's Club
☐ American Express ☐ Send Invoice

Card Number ______

Expiration Date ______

PREPAYMENT OF ONE YEAR'S DUES REQUIRED
No action can be taken on this application until payment is received.

*Applicants with an address in the New England Water Works Association a Section of AWWA (ME, NH, RI, VT, MA) must add $32.00 for Active Membership, or $15.00 for Affiliate Membership in their annual dues.

Address shown above is:
Check One: ☐ Home ☐ Office

MULTI-SECTION MEMBERSHIP

At this time you may also select a year's membership in other AWWA sections by circling your choices and include $12 for each section circled. Enter this total on the line reading "multi-section."

CIRCLE SECTION CHOICES

AKA	ALASKA
ALA	ALABAMA-MISSISSIPPI
ARI	ARIZONA
ATC	ATLANTIC-CANADA (NB, NF, NS, PEI)
BRC	BRITISH COLUMBIA (BC, YT)
CAL	CALIFORNIA-NEVADA
CHS	CHESAPEAKE (DE, DC, MD)
CON	CONNECTICUT
FLA	FLORIDA
GEO	GEORGIA
HWI	HAWAII (GUAM)
ILL	ILLINOIS
IND	INDIANA
INT	INTERMOUNTAIN (UT, PART OF ID)
IWA	IOWA
KAN	KANSAS
KNT	KENTUCKY-TENNESSEE
MEX	MEXICO
MIC	MICHIGAN
MOU	MISSOURI
MTN	MONTANA
NEB	NEBRASKA
*NEW	NEW ENGLAND (ME, NH, RI, VT, MA)
NEJ	NEW JERSEY
NEY	NEW YORK
NOC	NORTH CAROLINA
NOL	NORTH CENTRAL (MN, ND)
OHO	OHIO
ONT	ONTARIO
PAC	PACIFIC NORTHWEST (OR, WA, PART OF ID)
PEN	PENNSYLVANIA
PRT	PUERTO RICO
QUE	QUEBEC
RMT	ROCKY MOUNTAIN (CO, NM, WY)
SCR	SOUTH CAROLINA
SDK	SOUTH DAKOTA
SOW	SOUTHWEST (AR, LA, OK)
TEX	TEXAS
VIR	VIRGINIA
WEC	WESTERN CANADA (AB, MB, NT, SK)
WEV	WEST VIRGINIA
WIS	WISCONSIN

*IF "NEW" ENGLAND IS A CHOICE, add $44.00.
This includes their assessment and multi-section fee.

ALL APPLICANTS SHOULD COMPLETE THIS SECTION:
Circle the descriptions below that best describe you. The information is used in audits of AWWA readership.
Circle only ONE in each group.

BUSINESS AND INDUSTRY

- A. Public Water Supply Utility--Municipally Owned
- B. Public Water Supply Utility--Investor Owned
- C. Governmental—Federal, State, Local
- D. Consultant
- E. Contractor
- F. Private Industrial Systems or Water Wholesaler
- G. Manufacturer of Equipment & Supplies including Representatives
- H. Distributors of Equipment & Supplies including Representatives
- I. Educational Institutions, Faculty and Students, Libraries, and Other Related Organizations
- J. Fully Retired
- K. Research Lab
- L. Unreported

JOB TITLE

- A. Executive-Gen'l Mgr., Commissioner, Board Member, City Mgr., Mayor, President, Vice-President, Owner, Partner, Director, etc.
- B. Management-Division Head, Section Head, Mgr., Chief Engineer, Comptroller, etc.
- C. Engineering/non-managerial-Civil Engr., Mech. Engr., Envir. Engr., Planning Mgr., Field Engr., System Designer, etc.
- D. Scientific/non-managerial-Chemist, Biologist, Biophysicist, Researcher, Analyst, etc.
- E. Purchasing-Purchasing Agent, Procurement Specialist, Buyer, etc.
- F. Operations-Foreman, Operator, Maintenance, Crewman, Service Rep., etc.
- G. Marketing & Sales/non-managerial-Mkt. Analyst, Mkt. Rep., Salesman, Sales Rep., etc.
- H. Other (describe) ______

CHECK FIELD(S) SERVED:

- 5 ☐ Water Supply Only
- 7 ☐ Wastewater Only
- 9 ☐ Both
- 3 ☐ Other

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